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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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5179	7590	08/29/2006	EXAMINER	
PEACOCK MYERS, P.C. 201 THIRD STREET, N.W. SUITE 1340 ALBUQUERQUE, NM 87102			MCDONALD, RODNEY GLENN	
			ART UNIT	PAPER NUMBER
			1753	

DATE MAILED: 08/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/614,308

Applicant(s)

WITYAK ET AL.

Examiner

Rodney G. McDonald

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-68 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 19-68 is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/09,30/04, 2/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claims 5, 6, 16, 17, 19, 28, 36, 37 and 49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5, line 2, is indefinite because "pure" lacks basis for comparison.

Claim 6, line 5, is indefinite because it is unclear what a "high" intrinsic material is meant to include.

Claim 16, line 1, is indefinite because "locking ring assembly" lacks antecedent basis.

Claim 17, line 2, is indefinite because "an end said locking ring assembly" lacks antecedent basis.

Claim 19, line 1, is indefinite because "said locking ring assembly" lacks antecedent basis.

Claim 28, line 1, is indefinite because "said interference slip fit" lacks antecedent basis. Should it depend from claim 27?

Claim 36, line 2, is indefinite because "slightly" lacks antecedent basis.

Claim 37, line 2, is indefinite because "nearly" lacks antecedent basis.

Claim 49 is indefinite because a claim cannot depend on itself.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9, 11-17, 19-21, 26, 30-35, 37, 44-51 and 56-68 are rejected under 35 U.S.C. 102(e) as being anticipated by McLeod (U.S. Pat. 6,582,572).

Regarding claim 1, McLeod teach a rotary target for use in physical deposition processing wherein a backing tube 210 is used comprising a rotary target segment 220 assembleable on-site and disassembleable on-site onto and from the backing tube 210. A mechanical attachment 240 of the rotary target segment 220 to the backing tube 210 is present. (Column 4 lines 16-21)

Regarding claim 2, McLeod teach that there can be at least two rotary segments in the form of rings 220. (Column 4 lines 16-21)

Regarding claim 3, McLeod teach that the annular rings have joints between each other because of the mechanical seal formed between them. (Column 5 lines 18-29)

Regarding claim 4, McLeod teach that the rotary target segments 220 are disposable in serial position to one another. (See Fig. 2)

Regarding claim 5, McLeod teach that the rotary target segment 220 comprises at least one alloy material. (Column 4 lines 35-53)

Regarding claim 6, McLeod teach that the rotary target segment 220 can comprise at least one material such as platinum or chromium. (Column 4 lines 35-53)

Regarding claim 7, McLeod teach that the target can comprise any diameter. (Column 4 lines 26-28)

Regarding claim 8, McLeod teach that the diameter can be greater than ½ inch. (Column 4 lines 26-28)

Regarding claim 9, McLeod teach that the target can be any length. (See Fig. 2)

Regarding claim 11, McLeod teach that there can be more than two rotary target segments 220. (See Fig. 2)

Regarding claim 12, McLeod teach that there is no impurity in between the target joints as no solder wicks through. (Column 5 lines 19-29)

Regarding claim 13, McLeod teach that the joint can be square cut since the target segments can be square. (Column 4 lines 35-44)

Regarding claim 14, McLeod teach that the rotary target includes a backing tube 210. (Column 4 lines 16-21)

Regarding claim 15, McLeod teach that the target includes a locking assembly in the form of nuts 240 to lock the target segments 220 by compression in place. (Column 5 lines 18-29)

Art Unit: 1753

Regarding claim 16, McLeod teach that the locking ring assembly comprises an outer ring 240 and an inner ring 230 cooperative threading between the rings. (Column 4 lines 16-34)

Regarding claim 17, McLeod teach that the rotary target segment abuts against the locking ring assembly. (Column 5 lines 18-29)

Regarding claim 19, McLeod teach that the locking ring assembly is disposable within a groove in the backing tube. (Column 4 lines 16-21)

Regarding claim 20, McLeod teach that the mechanical attachment comprises a compression assembly. (Column 5 lines 18-29)

Regarding claim 21, McLeod teach that the compression assembly comprises a threaded end cap on an end of the backing tube. (Column 5 lines 18-29)

Regarding claim 26, McLeod teach that there is a smooth joint between the target segments. (See Fig. 2)

Regarding claim 30, McLeod teach that an adherent material of indium can be located between the rotary target segment and the backing tube. (Column 5 lines 30-39)

Regarding claim 31, McLeod teach that an adhesive material between the rotary target segments and the backing tube. (Column 5 lines 30-39)

Regarding claim 32, McLeod teach that the adhesive material is thermally conductive. (i.e. indium) (Column 5 lines 30-39)

Regarding claim 33, McLeod teach that the adhesive material is electrical conductive. (i.e. indium) (Column 5 lines 30-39)

Regarding claim 34, McLeod teach a method for on-site mechanical assembly of a rotary target, the method comprising providing at least one rotary target segment 220; providing a backing tube 210 and mechanically assembling the rotary target segment on the backing tube. (Column 4 lines 16-35; Column 5 lines 18-39)

Regarding claim 35, McLeod teach that the rotary target segments have an inner diameter that is larger than an outside diameter of the backing tube. (Column 4 lines 14-21)

Regarding claim 37, McLeod teach that the rotary target segments have an inner diameter that is "nearly equal" than an outside diameter of the backing tube. (Column 4 lines 14-21)

Regarding claim 44, McLeod teach providing at least two rotary target segments. (See Fig. 2)

Regarding claim 45, McLeod teach joining the rotary target segments by compression and solder. (Column 5 lines 18-39)

Regarding claim 46, McLeod teach utilizing a locking assembly. (Column 5 lines 18-39)

Regarding claim 47, McLeod teach using a locking assembly comprising locking a ring into a groove of the backing tube. (Column 5 lines 18-39)

Regarding claim 48, McLeod teach using an outer ring and inner ring cooperating with each other. (Column 5 lines 18-39)

Regarding claim 49, McLeod teach using cooperative threading between the rings. (Column 5 lines 18-39)

Regarding claim 50, McLeod teach abutting the locking assembly against the target segment. (Column 5 lines 18-39)

Regarding claim 51, McLeod teach disposing the rotary target segment over an end of the locking assembly. (See Fig. 2)

Regarding claim 56, McLeod teach that the joint can a smooth square cut seam. (Column 5 lines 18-39; Column 4 lines 35-44)

Regarding claim 57, McLeod teach backfilling between the rotary target segment and the backing tube. (Column 5 lines 30-39)

Regarding claim 58, McLeod teach backfilling with an adhesive material. (i.e. Indium). (Column 5 lines 30-39)

Regarding claim 59, McLeod teach backfilling with an electrically conductive adhesive. (i.e. indium) (Column 5 lines 30-39)

Regarding claim 60, McLeod teach backfilling with a thermally conductive material. (i.e. indium) (Column 5 lines 30-39)

Regarding claim 61, McLeod teach backfilling with an adherent material. (i.e. indium) (Column 5 lines 30-39)

Regarding claim 62, McLeod teach backfilling with an adherent low vapor pressure metal. (i.e. indium) (Column 5 lines 30-39)

Regarding claim 63, McLeod teach backfilling with indium. (Column 5 lines 30-39)

Regarding claim 64, the disassembling of the target segment from the backing tube would be inherent since the target is normally spent during a sputtering process.

Regarding claim 65, placing more ring targets on the backing tube is inherent in the process of sputtering since McLeod specifically mentions placing the targets on the cooling tube.

Regarding claim 66, McLeod teach compression fitting for the rotary target segments. (Column 5 lines 18-29)

Regarding claim 67, McLeod teach an end cup in the form of a nut for the backing tube. (Column 5 lines 18-39)

Regarding claim 68, McLeod teach threading on an end cap (i.e. nut), sliding on the rotary target segments onto the backing tube and screwing the end cap onto the backing tube and abutting the end caps against the rotary target segments. (Column 4 lines 16-35; Column 5 lines 19-39; Fig. 2)

Claims 1, 14, 27, 28, 29, 34, 36, 38, 39 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Nobumasa (Japan 11-071667).

Regarding claim 1, Nobumasa teach a rotary target with a backing tube including a rotary target segment assembleable on-site and disassembleable on-site onto and from the backing tube and a mechanical attachment of the rotary target segment to the backing tube. (See Abstract; Machine Translation paragraph 0042)

Regarding claim 14, Nobumasa teach a backing tube. (See Machine Translation 0042)

Regarding claim 27, Nobumasa teach an interference slip fit between a target and backing tube by heating of the target, slipping the backing tube into the target

center and cooling the target so that the target is interference fitted to the backing tube mechanically. (See Machine Translation paragraph 0042)

Regarding claim 28, the target segment has an inner diameter slightly smaller than the outside of the diameter of the backing tube since it needs to be heated to expand and when cooled contracts to interference fit to the backing tube. (See Machine Translation paragraph 0042)

Regarding claim 29, upon completion the target has an inner diameter that is "substantially equal" to the outside diameter of the backing tube. (See Machine Translation paragraph 0042)

Regarding claim 34, Nobumasa teach a method for on-site mechanical assembly of a rotary target comprising providing at least one rotary target segment; providing a backing tube and mechanically assembling the rotary target segment on the backing tube. (See Machine Translation paragraph 0042)

Regarding claim 36, Nobumasa teach a target that has an inner diameter slightly smaller than the outside of the backing tube. (See Machine Translation paragraph 0042)

Regarding claim 38, Nobumasa teach heating the target to expand the target prior to assembly on the backing tube to expand the target segment. (See Machine Translation paragraph 0042)

Regarding claim 40, Nobumasa teach cooling the target segment disposed on the backing tube to shrink fit the target onto the backing tube. (See Machine Translation paragraph 0042)

Claims 1, 2, 4, 7, 9, 14, 34, 44, 64 and 65 are rejected under 35 U.S.C. 102(e) as being anticipated by McKelvey (U.S. Pat. 4,443,318).

Regarding claim 1, McKelvey teach a rotary target for physical deposition processing wherein a backing tube is used comprising a rotary target assembleable on-site and disassembleable on-site onto and from a backing tube and mechanical attachment of the rotary target segment to the backing tube. (See Figs. 1, 3; Column 2 lines 58-68; Column 3 lines 1-6)

Regarding claim 2, McKelvey teach at least two rotary target segments. (See Fig. 3)

Regarding claim 4, McKelvey teach targets in serial position to one another. (See fig. 3)

Regarding claim 7, McKelvey teach that the target can be any diameter. (See Fig. 1)

Regarding claim 9, McKelvey teach that the target can be any length. (See Fig. 1)

Regarding claim 14, McKelvey teach that the target can comprise a backing tube. (See Fig. 1)

Regarding claim 34, McKelvey teach a method for assembling a rotary target comprising providing at least one rotary target segment, providing a backing tube and mechanically assembly the rotary target segment on the backing tube. (Column 2 lines 58-68; Column 3 lines 1-6)

Regarding claim 44, McKelvey teach utilizing at least one rotary target segment.
(See Fig. 3)

Regarding claim 64, McKelvey teach removing the target segment from the backing tube after the rotary target segment is spent. (Column 2 lines 58-58; Column 3 lines 1-6)

Regarding claim 65, McKelvey teach reusing the target backing tube with a new rotary target segment. (Column 2 lines 58-68; Column 3 lines 1-6)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over McLeod (U.S. 6,582,572) in view of Zega (U.S. Pat. 4,374,722).

McLeod is discussed above and all is as applies above. (See McLeod discussed above)

The difference between McLeod and the present claims is the length of the cathode.

Regarding claim 10, Zega teach a cylindrical cathode having a length of 500 mm (1.6 ft). (Column 11 lines 9-11)

The motivation for utilizing a length of 1.6 ft is that it allows for coating on tubes. (Column 10 lines 60-65)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified McLeod by utilizing a 1.6 ft length as taught by Zega because it allows for coating tubes.

Claims 22 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKelvey (U.S. Pat. 4,443,318) in view of Saunders et al. (U.S. Pat. 5,531,876).

McKelvey teach a rotatable magnetron cathode which is assembleable on-site and disassembleable on-site onto and form a backing tube. A mechanical attachment of the rotary target segment the backing tube. (See Figs. 1-3; Column 2 lines 58-68; Column 3 lines 1-6)

The difference between and the present claims is that the lock and key assembly is not discussed.

Saunders et al. teach a lock and key assembly for attaching a target to a backing. (See Fig. 2; Column 3 lines 7-20)

The motivation for utilizing a lock and key assembly is that it allows for easily replacing the target. (Column 1 lines 52-56)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified McKelvey by utilizing a lock and key assembly as taught by Saunders et al. because it allows for easily replacing the target.

Claims 23-25 and 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over McLeod (U.S. Pat. 6,582,572) in view of Blazic et al. (U.S. Pat. 5,032,246).

McLeod is discussed above and all is as applies above. (See McLeod discussed above)

The differences between McLeod and the present claims is the cooperative threading between the target and the backing tube is not discussed (Claim 23), the threading occurring along the entire length of the rotary target segment is not discussed (Claim 24), cooperative threading along a portion of the rotary target segment is not discussed (Claim 25), the step of mechanically assembling the rotary target segment on the backing tube is not discussed (Claim 52), the step of threading comprises along an entirety of the backing tube is not discussed (Claim 53) and threading along a portion of the backing tube is not discussed (Claim 54).

Regarding claims 23, 24, 25, 52, 53, 54, Blazic et al. teach providing threading between a backing plate and a target back surface and assembling. (See Abstract; Figure 1)

The motivation for providing threading between the target and the backing surface is that it allows for providing a quick change of the target. (Column 2 lines 25-28)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified McLeod by utilizing a threaded target and backing surface as taught by Blazic et al. because it allows for providing a quick change of the target.

Claims 34 and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nobumasa (Japan 11-071667).

Regarding claim 34, Nobumasa teach a method for on-site mechanical assembly of a rotary target comprising providing at least one rotary target segment; providing a backing tube and mechanically assembling the rotary target segment on the backing tube. (See Machine Translation paragraph 0042)

The difference between Nobumasa and the present claims is that shrinking the backing tube prior to placing the target on the backing tube is not discussed (Claim 41), slipping the target on the backing tube is not discussed (Claim 42) and the step of heating the backing tube creating a tight fit with the rotary target segment is not discussed (Claim 43).

Regarding claims 41, 42, 43, Nobumasa suggest heating the target so that the backing tube fits in the target and cooling the target so that the target interference fits on the backing tube. (See Machine Translation paragraph 0042) It is believed that one of ordinary skill in the art would recognize that the opposite effect could be achieved by

Art Unit: 1753

cooling the target tube to shrink so the target tube fits over the target tube and warming so an interference fit can be made.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Nobumasa by cooling the backing tube and warming so that the target tube is interference fitted on the backing tube.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 34 and 46-51 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims of U.S. Patent No.. Although the conflicting claims are not identical, they are not patentably distinct from each other because

Claims 34 and 46-51 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9-15 of copending Application No. 11/118,514. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims require "on-site assembly" of the rotary target however such on site assembly would be obvious in view of the fact that one of ordinary skill in the art would sputter at a particular site and would require assembling of the target.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Allowable Subject Matter

Claim 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

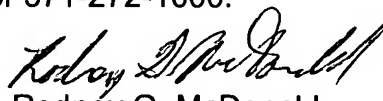
Claim 18 is indicated as allowable over the prior art of record because the prior art of record does not teach wherein at least one of the outer ring and the inner ring comprises a clam-shell with a hinge.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

Art Unit: 1753

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Rodney G. McDonald
Primary Examiner
Art Unit 1753

RM
August 23, 2006